DEPARTMENT OF TECHNOLOGY SERVICES

Data Center Consolidation

Issue 4 **February, 2010**

Data Center Consolidation

The Data Center Consolidation project is on schedule, with some of the most critical and most technical work scheduled to occur over the next couple of months, with email and database servers making up some of the servers that will physically be moved to the Salt Lake Data Center. This involves tight coordination between both the SLDC and the individual Campuses that will be moving the equipment. Much planning has occurred behind the scenes preparing the SLDC to receive servers as well as other IT equipment. Enhancements have been made to the cabling plant and additional power capacity has been increased to provide the required resources needed to support the additional equipment.

As the physical server migrations continue, the virtual moves are occurring at an accelerated pace. Over the past few months the Campuses and the Capitol campus have been busy converting servers from physical servers to virtual servers, referred to as P2V (Physical to Virtual). On the scheduled move dates these VM's will be migrated from their existing data center to the SLDC. Upon a successful move, the VM's will be placed into production and the physical server turned off. The technical team has been successful in achieving a physical to consolidation ratio of 10-12 virtual server instances per single blade, thus eliminating 9-11 physical servers in the process.

One of the milestones reached in the Month of February is passing the 50% completions mark. It has taken a lot of planning and hard work to accomplish this task.

Blade Systems

DTS Enterprise hosting has chosen the Hewlett Packard Blade Systems as the Blade servers of choice. Five fully configured Blade systems have been purchased and are configured to house Agency Virtual server instances.

The advantages of using blades instead of stand alone servers are many, including:

1 More efficient use of system resources. IG. Memory, CPU.

2. Smaller footprint in the data center.

3. Easily be clustered for enterprise critical applications.

4. Reduced power consumption.

5. Reduced cabling complexity

6. Easy to install and replace

7. Redundancy built in such as, power supplies, dual back plane paths, dual vlans, fans etc.

Our Customers will benefit from the combination of Blade Systems and VMWare to enable the hosting environment to be both fault tolerant and able to evolve with the changing needs of our customers and the enterprise.

Quick Update— TSM Training

On Tuesday February 23rd, the Storage and Backup Team offered a Tivoli Storage Manager (TSM) training class for the Hosting system administrators. The training was well attended. In efforts to make the training widely available, the training was webcast and is currently available for viewing at

http://www.ustream.tv/channel/nui

HP Blade System

Project Status

Virtualized but waiting to move	**224**
Servers completed	**987**
Data Centers Completed	**11**
Completed % of work	**53**
Physical Servers (Final Count)	**TBD**

Data Center Consolidation Project Objectives

- Consolidate from 34 Data Centers to 2 Data Centers
- Save $4 million in ongoing costs
- Reduce physical server counts from 1700 to 400 or less
- Create a true enterprise infrastructure environment

Campus A Update

With over 130 servers moved to the SLDC, Campus A consolidation efforts are making significant progress. At this point, the Campus A hosting team has moved 83 servers into the SLDC Virtual Infrastructure with another 17 servers virtualized at the DWS Admin North Data Center ready to move.

Recent milestones include conversion of a Sun data warehouse server to Linux. Greg Nelson, the data warehouse manager, is very impressed with the performance of their new hardware. Moving to a X86 Linux server has not only increased service to the agency, but also will save the department money on service and support that used to be paid out for the expensive and proprietary Sun Hardware.

Business plans are being developed to complete a migration of several additional systems from Sun Hardware to Linux that will be carried out in FY2011. This long-term project will continue to save the department money.

Campus A Hosting supervisor, Chris Kunde, would like to thank all of those who have helped assist his team with recent physical server moves, namely, Dan Gallegos and crew. Their dedication to the data center consolidation project has enhanced our ability to meet our deadlines.

> "Greg Nelson, the data warehouse manager, is very impressed with the performance of their new hardware."

Campus B Update

The consolidation efforts for the Department of Community and Culture (DCC) located at 250 N. 1950 W. were successfully completed the first week of February. Six servers were virtualized and/or consolidated to the Salt Lake Data Center.

DEQ is also nearing completion with much of the data and all of their databases having been moved to the SL data center.

The Tax department is well into the consolidation. 49 virtual servers have been created at the SL data center and are being prepared to be transitioned into production. Among these are the Motor Vehicle servers. Some preliminary load and speed tests have been and continue to be performed against the new virtual servers at the SLDC. The results of the limited preliminary tests have shown an increase of approximately 20 to 30 percent in performance over that of the existing hardware. The Motor Vehicle servers are also being transitioned to Linux from HP-UX, which will result in an on-going cost savings.

There is also much work being performed in preparing for the consolidation efforts for Utah State Hospital (USH) and Utah State Developmental Center (USDC). VPNs have been put into place to protect data while in transit. Database enhancements are also currently being made by the business in order to optimize database performance across the WAN. Speed tests after initial database modifications have shown an increase in performance.

> "shown an increase of approximately 20 to 30 percent in performance over that of the existing hardware."

StorageTek Backup Tape Library

Campus C Update

During the past two months, Campus C hosting has focused efforts on finalizing plans for the remaining UDOT and DPS servers located at campus datacenters. With a few exceptions, the UDOT and DPS servers moving to the Salt Lake Datacenter have all been virtualized. To date, 101 servers that will or have been migrated are virtual. A lot of effort is also being spent in campus service consolidation or migration prior to the migration of production systems.

The 32 support, development, and test servers (that will remain after project completion) have been relocated to the Salt Lake Datacenter. In doing so, the support group has been able to identify potential issues for production systems and are working through resolution processes without a major impact to agency customers.

The current plan is to immediately begin migrating production UDOT and DPS systems once the legislative session has ended in hope of completing all Campus C server migrations by the target date of March 31st.